Chapter 5

Funding of Research Facilities Projects

Highlights . . .

- Colleges and universities spent $2.8 billion to construct science and engineering (S&E) research facilities during fiscal years 1994 and 1995. The main source of construction funding was state and local governments ($1.2 billion, or 43 percent of all construction funding). There was a decrease in direct construction funding coming from the Federal government. Funds from the Federal government used to defray the indirect costs of conducting Federally funded research are counted as institutional funding.
- Repair / renovation projects were most likely to be funded through institutional sources; of the $1.1 billion of repair / renovation expenditures undertaken by colleges and universities in fiscal years 1994-1995, $433 million (41 percent) came from institutional funds. The proportion funded by the Federal government increased from 6 percent in 1990-1991 to 10 percent in 1994-1995 (a total in 1994-1995 of $111 million).
- State and local governments were the largest single source of funding for the construction of S&E research facilities in public institutions in fiscal years 1994-1995.
- For the 1994-1995 fiscal years, the single largest source of funding for the construction of S&E research facilities at the private universities in the top 100 was institutional funds. Private, other doctorate-granting institutions and nondoctorate-granting institutions relied primarily on private donations in fiscal years 1994-1995.

Background

Funding for both the construction of facilities and the repair/renovation of existing S&E research space continued to decline between fiscal years 1992-1993 and 1994-1995. The sources of funding for construction of space and the repair/renovation of existing space also changed between these two time periods. Below, we discuss how higher education institutions financed S&E capital projects between 1990 and 1995.

The Survey Question

Institutional respondents were asked to report funding sources for projects to construct S&E research facilities and to report funding sources to repair/renovate S&E research space. Respondents reported only the projects that cost over $100,000, and that began in fiscal years 1994-1995. Possible sources of funding included the Federal government, state or local governments, private donations, institutional funds, tax-exempt bonds, debt financing, and other sources. **(**See Item 5 of the survey in Appendix C.)

Data Considerations

Institutions reported construction and repair/renovation projects only for S&E research space exceeding $100,000. Considerable diversity of funding for these projects is possible. Federal funding, for instance, can include specific facilities support programs administered by the National Science Foundation (NSF) and the National Institutes of Health (NIH). Federal funding also might include non-peer-reviewed projects that are specified individually through Congressional legislation, rather than specific agency programs. Overlap between the funding categories is possible. For example, indirect costs included as institutional funds can come from Federal, state, and local governments, as well as from industry.

No survey information distinguished indirect cost recovery from other institutional funding (e.g., the use of operating or endowment funds).

Once again, dollar figures for years prior to 1995 were adjusted using the Bureau of the Census's Composite Fixed-Weighted Price Index for Construction. This adjustment means that dollar figures presented in this report do not match figures presented in previous reports.

Because of the support that state governments provide to public higher education, the control of the institution becomes relevant to discussions of the funding of capital projects involving S&E research space. Therefore, this chapter is the only one that distinguishes between public and private institutions.

Findings

How Did Colleges and Universities Fund Construction and Repair/Renovation of S&E Research Space?

Colleges and universities spent $2.8 billion to construct S&E research facilities during fiscal years 1994 and 1995. The main source of construction funding was state and local governments ($1.2 billion, or 43 percent of all construction funding). This was an increase from prior years, both relatively and absolutely; in fiscal years 1992-1993, state and local governments contributed $1.0 billion in constant 1995 dollars, or 34 percent of all construction funding.

Direct federal funding of construction at colleges and universities dropped from $537 million in 1990-1991, to $497 million in 1992-1993, to $207 million in 1994-1995. Corresponding to this decline, the relative proportion of construction costs contributed directly by the Federal government dropped from 16 percent in 1990-1991 and 1992-1993, to 7 percent in 1994-1995. However, substantial Federal funding comes through overheads on grants and contracts from the Federal government. These overhead payments are used to defray the indirect costs of conducting Federally funded research and are counted as institutional funding.

In addition to increases in state and local government funding, institutional funds accounted for a larger amount of construction dollars in 1994-1995 than in 1992-1993 ($442 million and $405 million respectively). Finally, the use of tax exempt bond funding for construction decreased from $670 million in 1992-1993, to $426 million in 1994-1995. An increase in other debt funding partly made up for this decrease, as other debt financing rose from $42 million in 1992-1993, to $146 million in 1994-1995 (Table 5-1).

Table 5-1. Trends in the sources of funding for construction of science and engineering (S&E) research facilities: 1990-1995
(constant 1995 dollars in millions)[1]

	Dollar contribution							
	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt	Other Debt	Other Sources
All Institutions								
1990-1991	$3,351.1	$536.7	$1,077.0	$397.0	$443.9	$819.1	$39.9	$37.2
1992-1993	3,039.8	496.5	1,047.2	325.5	404.7	670.3	42.1	53.7
1994-1995	2,767.6	206.5	1,180.8	360.0	442.0	426.1	145.7	6.5
	Relative contribution							
	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt	Other Debt	Other Sources
All Institutions								
1990-1991	100%	16%	32%	12%	13%	24%	1%	1%
1992-1993	100	16	34	11	13	22	1	2
1994-1995	100	7	43	13	16	15	5	0

[1] Current dollars have been adjusted to 1995 constant dollars using the Bureau of the Census's Composite Fixed-Weighted Price Index for Construction.

NOTE: Percentages may not total to 100 due to rounding.

SOURCE: National Science Foundation/SRS, 1996 Survey of Scientific and Engineering Research Facilities at Colleges and Universities.

Repair/renovation projects were more likely to be funded through institutional sources; of the $1.1 billion of repair/renovation expenditures undertaken by colleges and universities in 1994-1995, $433 million (41 percent) came from institutional funds. The proportion funded by the Federal government increased from 6 percent in 1990-1991, to 7 percent in 1992-1993, to 10 percent in 1994-1995 (a total in 1994-1995 of $111 million). Much of the increase in repair/renovation expenditures between 1992-1993 and 1994-1995 was funded by increasing contributions from institutional funds (from $358 million to $433 million over the period), from other debt funding (from $29 million to $79 million), and from private contributions (from $79 million to $111 million) (Table 5-2).

Table 5-2. Trends in the sources of funding for repair and renovation of science and engineering (S&E) research facilities: 1990-1995
(constant 1995 dollars in millions)[1]

	Dollar contribution							
	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt	Other Debt	Other Sources
All Institutions								
1990-1991	$929.8	$55.3	$273.7	$113.2	$400.1	$74.8	$9.0	$3.5
1992-1993	902.5	60.9	272.5	78.5	357.5	86.7	29.0	17.4
1994-1995	1,058.0	110.6	265.6	110.7	432.7	50.5	78.6	9.3
	Relative contribution							
	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt	Other Debt	Other Sources
All Institutions								
1990-1991	100%	6%	29%	12%	43%	8%	1%	0%
1992-1993	100	7	30	9	40	10	3	2
1994-1995	100	10	25	10	41	5	7	1

[1] Current dollars have been adjusted to 1995 constant dollars using the Bureau of the Census's Composite Fixed-Weighted Price Index for Construction.

NOTE: Percentages may not total to 100 due to rounding.

SOURCE: National Science Foundation/SRS, 1996 Survey of Scientific and Engineering Research Facilities at Colleges and Universities.

How Did Public Institutions Fund the Construction of S&E Research Space?

The source of funding for S&E construction projects in public, research-performing institutions varied across time and by institutional type (Table 5-3 and Figure 5-1).

Table 5-3. Trends in the sources of funding for construction of science and engineering (S&E) research facilities at public institutions: 1990-1995 (constant 1995 dollars in millions)[1]

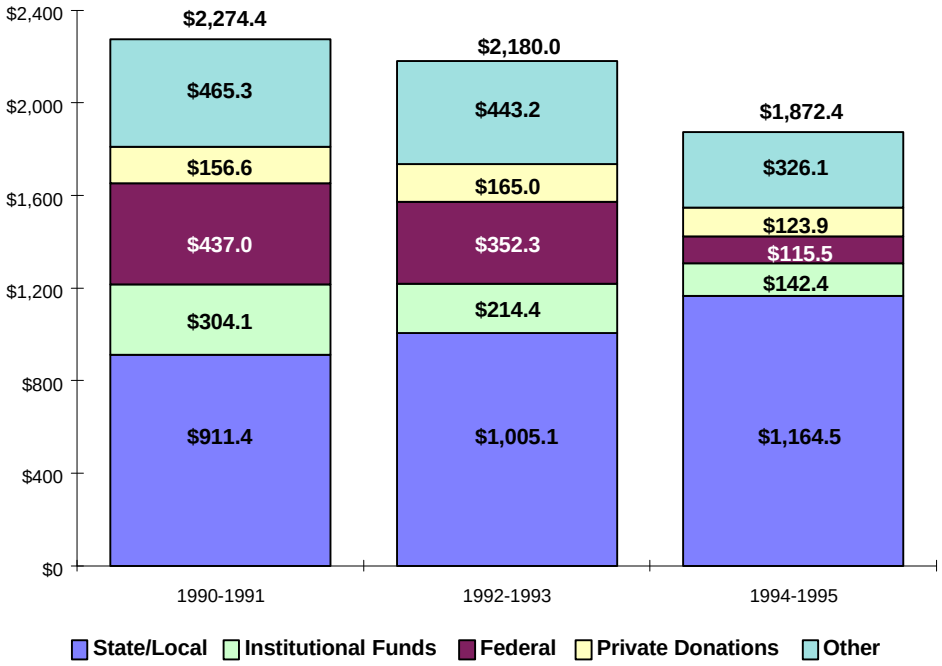
Public Institutions	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt	Other Debt	Other Sources
	Dollar contribution							
Top 100								
1990-1991	$1,520.1	$172.8	$644.7	$135.7	$238.0	$312.7	$8.8	$7.3
1992-1993	1,565.4	233.0	611.8	136.1	159.9	405.4	17.5	1.8
1994-1995	1,231.5	107.6	612.9	86.8	130.9	273.3	13.5	6.5
Other doctorate-granting								
1990-1991	626.5	257.6	256.8	20.9	66.1	24.4	0.0	0.4
1992-1993	520.8	113.2	311.8	28.9	54.3	12.9	0.0	0.0
1994-1995	346.6	4.9	261.1	37.1	10.7	32.8	0.0	0.0
Nondoctorate-granting								
1990-1991	128.0	6.5	9.8	0.0	0.0	111.6	0.0	0.0
1992-1993	93.5	6.2	81.5	0.0	0.2	3.9	0.0	1.7
1994-1995	294.3	3.0	290.5	0.0	0.8	0.0	0.0	0.0
	Relative contribution							
Public Institutions	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt	Other Debt	Other Sources
Top 100								
1990-1991	100%	11%	42%	9%	16%	21%	1%	0%
1992-1993	100	15	39	9	10	26	1	0
1994-1995	100	9	50	7	11	22	1	1
Other doctorate-granting								
1990-1991	100	41	41	3	11	4	0	0
1992-1993	100	22	60	6	10	2	0	0
1994-1995	100	1	75	11	3	9	0	0
Nondoctorate-granting								
1990-1991	100	5	8	0	0	87	0	0
1992-1993	100	7	87	0	0	4	0	2
1994-1995	100	1	99	0	0	0	0	0

[1] Current dollars have been adjusted to 1995 constant dollars using the Bureau of the Census's Composite Fixed-Weighted Price Index for Construction.

NOTE: Percentages may not total to 100 due to rounding.

SOURCE: National Science Foundation/SRS, 1996 Survey of Scientific and Engineering Research Facilities at Colleges and Universities.

Figure 5-1. Trends in the Sources of Funding for S&E Research Construction Projects at Public Institutions: 1990-1995



SOURCE: National Science Foundation/SRS, 1996 Survey of Scientific and Engineering Research Facilities at Colleges and Universities.

In constant dollars and in relative proportions (since fiscal years 1990-1991), the Federal government's contribution to S&E research construction projects was at its lowest in fiscal years 1994-1995. Funding from the Federal government to the public institutions in the top 100 totaled $107.6 million for the 1994-1995 fiscal years. For the previous two fiscal years, Federal funding totaled $233 million in constant dollars. Funding from the Federal government to the other doctorate-granting universities declined from $113.2 million in 1992-1993 to $4.9 million in 1994-1995. Although relatively low compared to both groups of doctorate-granting institutions, Federal funding for the construction of S&E facilities at nondoctorate-granting institutions also declined, from $6.2 million in fiscal years 1992-1993, to $3 million in 1994-1995.

State and local governments were the largest single source of funding for the construction of S&E research facilities in fiscal years 1994-1995, for all three types of public institutions. Public institutions in the top 100 received $612.9 million from state and local governments (representing approximately half of all construction funds). The public, other doctorate-granting institutions received $261.1 million from this source (75 percent of all construction funds). The public, nondoctorate-granting institutions received virtually all of their construction funds from state and local governments ($290.5 million, or 99 percent of all funding).

The proportion of funding derived from state and local governments to construct S&E research space also increased dramatically for both the public, other doctorate-granting institutions and the nondoctorate-granting institutions. For the 1990-1991 fiscal years, state and local governments provided 41 percent of the funding of S&E facilities for public, other doctorate-granting institutions. For the next two fiscal

years, this percentage increased to 60, and for 1994-1995, to 75. For the 1990-1991 fiscal years, state and local government provided only 8 percent of the construction funding to the nondoctorate-granting institutions. Funding increased to 87 percent for the next two fiscal years, and then to 99 percent in fiscal years 1994-1995.

Tax-exempt bonds were the second largest source (22 percent) of funding for construction projects at the public institutions in the top 100 for fiscal years 1994-1995. Other public, doctorate-granting institutions derived only 9 percent of their funding from tax exempt bonds during that period, and the nondoctorate-granting institutions derived no funds whatsoever from that source. Institutional funds, which provided 11 percent of the construction funding for the public universities in the top 100 in 1994-1995, contributed only 3 percent of the total funding for such projects in the public, other doctorate-granting institutions, and less than 1 percent of the funding at nondoctorate-granting institutions.

How Did Private Institutions Fund the Construction of S&E Research Space?

Private, research-performing institutions funded the construction of S&E research facilities differently than did public institutions. Unlike public colleges and universities, private institutions received very little funding from state and local governments for these projects. For the 1994-1995 fiscal years, private institutions in the top 100 received $9.1 million from state and local governments, only 1 percent of all construction funding. Other, doctorate-granting institutions received $7.2 million (9 percent) of their total S&E construction funding from state and local governments. Private, nondoctorate-granting institutions did not receive any money from state and local sources in fiscal years 1994-1995 (Table 5-4 and Figure 5-2).

Table 5-4. Trends in the sources of funding for construction of science and engineering (S&E) research facilities at private institutions: 1990-1995 (constant 1995 dollars in millions)[1]

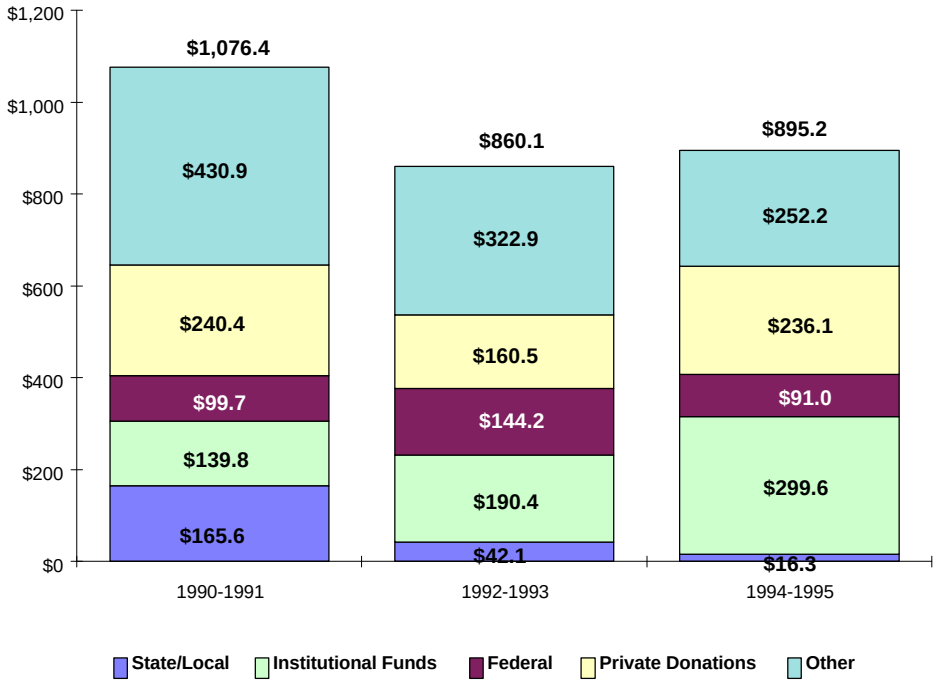
Private Institutions	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt Bonds	Other Debt	Other Sources
	Dollar contribution							
Top 100								
1990-1991	$756.2	$44.6	$164.6	$218.4	$56.0	$211.9	$31.1	$29.5
1992-1993	628.1	3.9	37.1	136.4	172.5	203.4	24.5	50.2
1994-1995	775.6	87.9	9.1	154.2	290.1	105.5	128.8	0.0
Other doctorate-granting								
1990-1991	303.8	49.4	1.0	16.8	79.6	157.0	0.0	0.0
1992-1993	225.7	138.9	5.0	19.9	17.5	44.4	0.0	0.0
1994-1995	83.3	0.9	7.2	65.9	5.9	0.0	3.4	0.0
Nondoctorate-granting								
1990-1991	16.5	5.7	0.0	5.2	4.2	1.4	0.0	0.0
1992-1993	6.3	1.4	0.0	4.2	0.3	0.3	0.0	0.0
1994-1995	36.3	2.2	0.0	16.0	3.6	14.5	0.0	0.0
	Relative contribution							
Private Institutions	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt Bonds	Other Debt	Other Sources
Top 100								
1990-1991	100%	6%	22%	29%	7%	28%	4%	4%
1992-1993	100	1	6	22	27	32	4	8
1994-1995	100	11	1	20	37	14	17	0
Other doctorate-granting								
1990-1991	100	16	0	6	26	52	0	0
1992-1993	100	62	2	9	8	20	0	0
1994-1995	100	1	9	79	7	0	4	0
Nondoctorate-granting								
1990-1991	100	34	0	31	26	9	0	0
1992-1993	100	22	0	67	5	5	0	0
1994-1995	100	6	0	44	10	40	0	0

[1] Current dollars have been adjusted to 1995 constant dollars using the Bureau of the Census's Composite Fixed-Weighted Price Index for Construction.

NOTE: Percentages may not total to 100 due to rounding.

SOURCE: National Science Foundation/SRS, 1996 Survey of Scientific and Engineering Research Facilities at Colleges and Universities.

Figure 5-2. Trends in the Sources of Funding for S&E Research Construction Projects at Private Institutions: 1990-1995



SOURCE: National Science Foundation/SRS, 1996 Survey of Scientific and Engineering Research Facilities at Colleges and Universities.

For the 1994-1995 fiscal years, the single largest source of funding for the construction of S&E facilities at private institutions in the top 100 was institutional funds--funds that provided 37 percent of all S&E construction funding. For private, other doctorate-granting institutions, 79 percent of all S&E construction funding came from private donations. Similarly, private donations were the source providing the largest single share of funding to private, nondoctorate-granting institutions. Private donations, in fact, comprised 44 percent of all construction funding at those institutions.

Federal funding for S&E construction projects at the private institutions in the top 100 was higher for fiscal years 1994-1995 than for either of the other two fiscal years examined. In 1994-1995, the Federal government provided these institutions with $87.9 million for projects, a dramatic increase over the $3.9 million provided for the 1992-1993 fiscal years. At private, other doctorate-granting institutions, Federal funding dropped from $138.9 million in the 1993-1994 fiscal years to $.9 million over the next two fiscal years--a decline from 62 to 1 percent of the relative contribution. Private, nondoctorate-granting institutions experienced a slight increase in Federal funds for the construction of S&E research facilities between fiscal years 1992-1993 and 1994-1995, from $1.4 million to $2.2 million. However, in relative terms, due to large increases in funding from private donations and tax exempt bonds, the overall percentage contributed by the Federal government declined from 22 to 6 percent.

How Did Public Institutions Fund the Repair/Renovation of S&E Research Space?

For fiscal years 1994-1995, state and local government was the single largest source of funding for the repair / renovation of S&E research projects in all three types of institutions. In the public institutions in the top 100, state and local government provided $177.9 million to repair / renovate existing S&E research space; this equaled over half (51 percent) of all repair / renovation expenditures during fiscal years 1994-1995. State and local government provided public, other doctorate-granting institutions with $44.4 million during those years (44 percent of all such funding). Public, nondoctorate-granting institutions received $32.1 million from state and local governments (70 percent of all repair / renovation funding) (Table 5-5).

Table 5-5. Trends in the sources of funding for repair/renovation of science and engineering (S&E) research facilities at public institutions: 1990-1995 (constant 1995 dollars in millions)[1]

Public Institutions	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt Bonds	Other Debt	Other Sources
	Dollar contribution							
Top 100								
1990-1991	$369.7	$14.6	$161.7	$49.3	$131.4	$12.0	$0.0	$0.7
1992-1993	429.4	13.6	174.0	26.6	144.3	56.3	1.7	12.8
1994-1995	348.5	23.4	177.9	6.6	120.1	14.3	0.9	5.3
Other doctorate-granting								
1990-1991	116.0	12.4	83.5	0.0	18.5	1.6	0.0	0.0
1992-1993	119.6	20.1	73.0	0.3	21.9	4.0	0.0	0.1
1994-1995	101.3	8.4	44.4	9.1	34.2	4.0	0.0	1.2
Nondoctorate-granting								
1990-1991	20.3	0.8	17.8	0.0	1.7	0.0	0.0	0.0
1992-1993	13.4	3.5	9.3	0.0	0.6	0.0	0.0	0.0
1994-1995	45.9	7.1	32.1	0.2	6.5	0.0	0.0	0.0
	Relative contribution							
Public Institutions	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt Bonds	Other Debt	Other Sources
Top 100								
1990-1991	100%	4%	44%	13%	36%	3%	0%	0%
1992-1993	100	3	41	6	34	13	0	3
1994-1995	100	7	51	2	34	4	0	2
Other doctorate-granting								
1990-1991	100	11	72	0	16	1	0	0
1992-1993	100	17	61	0	18	3	0	0
1994-1995	100	8	44	9	34	4	0	1
Nondoctorate-granting								
1990-1991	100	4	88	0	8	0	0	0
1992-1993	100	26	69	0	5	0	0	0
1994-1995	100	15	70	0	14	0	0	0

[1] Current dollars have been adjusted to 1995 constant dollars using the Bureau of the Census's Composite Fixed-Weighted Price Index for Construction.

NOTE: Percentages may not total to 100 due to rounding.

SOURCE: National Science Foundation/SRS, 1996 Survey of Scientific and Engineering Research Facilities at Colleges and Universities.

For the public, doctorate-granting institutions (both the top 100 and other doctorate-granting), institutional funds comprised the second largest source of funding for the repair/renovation of S&E research space for fiscal years 1994-1995. In both types of institutions, those funds accounted for 34 percent of the total.

How Did Private Institutions Fund the Repair/Renovation of S&E Research Space?

Between fiscal years 1992-1993 and 1994-1995, funding of S&E repair / renovation projects in private, research-performing institutions increased in all three types of institutions. This was not the case for the public institutions. Across the two time periods, the funding of S&E repair / renovation projects in private institutions in the top 100 increased from $243.8 million to $406.2 million. In private, other doctorate-granting institutions, funding increased from $74.8 million to $125.2 million. Funding for projects in private, nondoctorate-granting institutions increased from $21.6 million to $30.9 million (Table 5-6).

The private, doctorate-granting institutions--both the top 100 and other doctorate-granting--relied primarily on institutional funds to finance the repair / renovation of S&E research space in fiscal years 1994-1995. Fifty-one percent of the total S&E funding for the private institutions in the top 100 came from institutional funds in that time period, equaling $208.1 million. Almost half (49 percent) of the funding to repair / renovate S&E research space at the private, other doctorate-granting institutions was derived from institutional funds.

Only 10 percent of the funding of S&E repair / renovation projects at private, nondoctorate-granting institutions came from institutional funds for fiscal years 1994-1995. Private donations totaling $16.8 million accounted for 54 percent of all repair / renovation funding at private, nondoctorate-granting institutions.

Table 5-6. Trends in the sources of funding for repair/renovation of science and engineering (S&E) research facilities at private institutions: 1990-1995 (constant 1995 dollars in millions)[1]

Private Institutions	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt Bonds	Other Debt	Other Sources
	Dollar contribution							
Top 100								
1990-1991	$343.0	$21.7	$10.6	$52.9	$191.6	$54.9	$9.0	$2.0
1992-1993	243.8	12.4	8.3	39.3	131.2	20.8	27.2	4.5
1994-1995	406.2	29.6	10.5	70.6	208.1	23.6	63.1	0.7
Other doctorate-granting								
1990-1991	65.6	5.7	0.1	7.4	48.9	2.6	0.0	0.8
1992-1993	74.8	5.0	7.9	4.9	53.1	3.9	0.0	0.0
1994-1995	125.2	40.5	0.2	7.4	60.8	2.0	12.2	2.1
Nondoctorate-granting								
1990-1991	15.3	0.0	0.0	3.6	8.1	3.7	0.0	0.0
1992-1993	21.6	6.3	0.0	7.4	6.3	1.7	0.0	0.0
1994-1995	30.9	1.6	0.5	16.8	3.0	6.6	2.4	0.0
	Relative contribution							
Private Institutions	All sources	Federal	State/ Local	Private Donations	Institutional Funds	Tax Exempt Bonds	Other Debt	Other Sources
Top 100								
1990-1991	100%	6%	3%	15%	56%	16%	3%	1%
1992-1993	100	5	3	16	54	9	11	2
1994-1995	100	7	3	17	51	6	16	0
Other doctorate-granting								
1990-1991	100	9	0	11	74	4	0	1
1992-1993	100	7	11	7	71	5	0	0
1994-1995	100	32	0	6	49	2	10	2
Nondoctorate-granting								
1990-1991	100	0	0	23	53	24	0	0
1992-1993	100	29	0	34	29	8	0	0
1994-1995	100	5	2	54	10	21	8	0

[1] Current dollars have been adjusted to 1995 constant dollars using the Bureau of the Census's Composite Fixed-Weighted Price Index for Construction.

NOTE: Percentages may not total to 100 due to rounding.

SOURCE: National Science Foundation/SRS, 1996 Survey of Scientific and Engineering Research Facilities at Colleges and Universities.